

CLAIMS

1. A method for the preparation of a clay-dispersed polymer nanocomposite, which comprises introducing poly(ϵ -caprolactone) , alone or in
5 combination with a thermodynamically compatible resin, as a matrix resin.

2. The method as set forth in claim 1, wherein the thermodynamically compatible resin is chlorinated polyethylene or poly(vinyl chloride).

10 3. The method as set forth in claim 1, wherein the thermodynamically compatible resin is selected from the group consisting of a poly(styrene-co-acrylonitrile)copolymer, a poly(acrylonitrile-co-butadiene-co-styrene) copolymer, and a poly(vinyl
15 chloride).

4. The method as set forth in claim 3, wherein the poly(ϵ -caprolactone) ranges, in molecular weight, from 10,000 to 100,000.

5. The method as set forth in claim 1, wherein
20 the poly(ϵ -caprolactone) is mixed with a thermodynamically compatible resin, along with an intercalant, and extruded altogether, said thermodynamically compatible resin being selected from the group consisting of a poly(styrene-co-acrylonitrile)copolymer, a poly(acrylonitrile-co-
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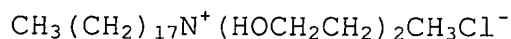
butadiene-co-styrene) copolymer, and a poly(vinyl chloride).

6. The method as set forth in claim 1, wherein the poly(ϵ -caprolactone) is mixed with an organophilic clay and extruded or mixed to give a master batch, then, blended with a thermodynamically compatible resin, and extruded.

7. The method as set forth in claim 1, wherein the clay-dispersed polymer composite comprises clay which is intercalated by an intercalant.

8. The method as set forth in claim 7, wherein the intercalant is selected from the group consisting of hydroxyethylmethyloctadecylammonium chloride, represented by the following chemical formula 1;

15 Chemical Formula 1



Amines, represented by the following chemical formula 2;

 Chemical Formula 2

20 $\text{CH}_3(\text{CH}_2)_{n-1}\text{NH}_2$

wherein n is 8, 10, 12, 16 or 18.

secondary amines represented by the following chemical formula 3:

 Chemical Formula 3

25 $\text{CH}_3(\text{CH}_2)_{n-1}\text{NHR}$

wherein n is an integer of 8-18 and R is a hydrocarbon.

9. The method as set forth in claim 1, wherein the clay-dispersed polymer composite comprises clay which contains montmorillonite.

10. The method as set forth in claim 1, wherein
5 the poly(ϵ -caprolactone) is used at an amount of 20-40 % by weight based on the total weight of the nanocomposite.